Permit Fact Sheet

General Information

Permit Number:	WI-0059536-04-1
Permittee Name:	Kinnard Farms Inc
Address:	E2675 County Hwy S
City/State/Zip:	Casco WI 54205
Discharge Location:	E2675 County Road S, Casco, WI (Site One) and E2669 County Road S, Casco (Site Two)
Receiving Water:	Unnamed tributaries to Casco Creek within the Kewaunee River Watershed, and groundwaters of the state

Animal Units					
	Current AU		**Proposed AU** **(Note: If all zeroes, expansions are not expected during permit term)**		
Animal Type	**Mixed**	**Individual**	**Mixed**	**Individual**	**Date of Proposed Expansion**
Milking and Dry Cows	12530	12799	12530	12799	01/07/2022
Heifers (800 lbs. to 1200 lbs.)	330	300	330	300	01/07/2022
Total	12860	12799	12860	12799	

Facility Description

Kinnard Farms Inc is an existing Concentrated Animal Feeding Operation in Kewaunee, WI. Kinnard Farms is owned and operated by Lee Kinnard and family. As of January of 2020, Kinnard Farms has 5,594 milking and dry cows and 1,997 large heifers (800 to 1,200 lbs.). Kinnard Farms generates 99,748,335 gallons of manure and process wastewater and 5,886 tons of solid waste each year. As of January 2020, Kinnard Farms has greater than the required minimum of 180 days of manure storage. Kinnard Farms has 16325.44 acres in its approved nutrient management plan, of which 14,337.59 acres are rented or in agreements and 1,987.85 acres are owned. Kinnard Farms installed four anaerobic digesters at Site Two in 2020, which will digest all liquid manure produced at Kinnard Farms. This permit is being modified to include the additional sample points to cover the anaerobic digesters.

Sample Point Designation For Animal Waste		
Sample Point Number	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**	
001	Solids 001: Sample point 001is for separated manure solids (sand or fiber). This solid manure is typically reused as bedding and stored under roof in a designed storage structure (Site One and Two both have these sources). If land applied and not reused, representative samples shall be taken for each manure source	

Sample Point Designation For Animal Waste		
Sample Point Number	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**	
	type.	
002	WSF 002: Sample point 002 is for liquid waste storage facility 002 (WSF 2) located at Site One. WSF 2 is an earthen storage located at Site One. The facility has a capacity of about 1 million gallons and was constructed in 1999. WSF 2 will require an engineering evaluation, see Schedules section for due dates.	
003	WSF 003: Sample point 003 is for liquid waste storage facility 003 (WSF 3) located at Site One. WSF 3 is an earthen storage located at Site One. The facility has a capacity of about 20 million gallons and was constructed in 1999. WSF 3 will require an engineering evaluation, see Schedules section for due dates.	
004	Solids 004: Sample point 004 is for solid manure sources that are directly land applied and not stored in a waste storage facility. This includes solid sources such as calf hutch manure, maternity pen bedpack, heifer bedpack, steer manure, etc. Representative samples shall be taken for each manure source type (Site One and Two).	
005	WSF 005: Sample point 005 is for liquid waste storage facility 005 (WSF 5) located at Site Two. WSF 5 is the southwestern concrete storage that has a capacity of about 30 million gallons and was constructed in 2016. This storage accepts primarily process wastewater from the feed storage area.	
006	WSF 006: Sample point 006 is for liquid waste storage facility 006 (WSF 6) located at Site Two. WSF 6 is the northwestern concrete storage that has a capacity of about 18 million gallons and was constructed in 2015. This storage accepts manure and process wastewater from Site Two barn.	
007	WSF 007: Sample point 007 is for liquid waste storage facility 007 (WSF 7) located at Site Two. WSF 7 is the eastern concrete storage that has a capacity of about 30 million gallons and was constructed in 2015. This storage accepts manure and process wastewater from Site Two barn.	
008	Solids 008: Sample point008 is for any manure solids removed from bottom of liquid waste storage facilities. This includes manure-laden sand solids, manure fiber solids, etc. Representative samples shall be taken from each waste storage facility.	
009	Feed Storage Area & Runoff Control System (Site One): Sample point 009 is for visual monitoring and inspection of the feed storage area and associated runoff control system located at Site One. Area is also being utilized as a manure stacking pad. Proper operation and maintenance is required to ensure discharges of manure and process wastewater meet permit conditions. Weekly inspections are required and shall be recorded according to monitoring program. All runoff from this area is collected into WSF 3. An engineering evaluation of the feed storage area and runoff control system shall be submitted according to the Schedules section of the permit.	
010	Feed Storage Area & Runoff Control System (Site Two): Sample point 010 is for visual monitoring and inspection of the feed storage area and associated runoff control system located at Site Two. Proper operation and maintenance is required to ensure discharges of process wastewater meet permit conditions. Weekly inspections are required and shall be recorded according to monitoring program. All runoff from this area is currently collected into WSF 5.	
011	Storm Water Runoff Control System: Sample point 011 is for visual monitoring and inspection of all production site storm water conveyance systems (Site One and Two). This includes roof gutter and downspout structures, drainage tile systems, grassed waterways and other diversion systems that transport uncontaminated storm water. Proper operation and maintenance is required to keep uncontaminated runoff diverted away from manure and process wastewater handling systems. Weekly inspections are required	

Sample Point Designation For Animal Waste		
Sample Point Number	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**	
	and shall be recorded according to monitoring program.	
015	Sample Point 15: Digested Liquids – Anaerobic Digesters (AD) 1 and 2. This sample point addresses all digested liquids located within the proposed digester cells AD 1 and AD 2. Manure will be piped from the existing manure processing buildings (after sand removal) to the digesters and then returned to the manure processing buildings to be transferred to existing on-site waste storage facilities after the digestion is completed. Sampling from within the digester cell(s) for nutrient content is only required if the liquids are to be manually pumped from the cell(s) and directly land applied. The plans and specifications for the digesters that were installed in 2020 have been approved by the Department and meet permit requirements.	
016	Sample Point 16: Digested Liquids – Anaerobic Digesters (AD) 3 and 4. This sample point addresses all digested liquids located within the proposed digester cells AD 3 and AD 4. Manure will be piped from the existing manure processing buildings (after sand removal) to the digesters and then returned to the manure processing buildings to be transferred to existing on-site waste storage facilities after the digestion is completed. Sampling from within the digester cell(s) for nutrient content is only required if the liquids are to be manually pumped from the cell(s) and directly land applied. The plans and specifications for the digesters that were installed in 2020 have been approved by the Department and meet permit requirements.	

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
Kinnard Site Two Production Area	801	MW-1 (801)	
	802	MW-2 (802)	
	803	MW-3 (803)	
	804	MW-4 (804)	
	805	MW-5 (805)	

1 Livestock Operations - Proposed Operation and Management

Production Area Discharge Limitations

Beginning on the effective date of the permit, the permittee may not discharge pollutants from the operation's production area (e.g., manure storage areas, outdoor animal lots, composting and leachate containment systems, milking center wastewater treatment/containment systems, raw material storage areas) to navigable waters, except in the event a 25-year, 24-hour rainfall event (or greater) causes the discharge from a structure which is properly designed and maintained to contain a 25-year, 24-hour rainfall event for this location as determined under s. NR 243.04. If an allowable discharge occurs from the production area, state water quality standards may not be exceeded.

Runoff Control

The permit requires control of contaminated runoff from all elements of the production area to prevent a discharge of pollutants to navigable waters in accordance with the Production Area Discharge Limitations and to comply with surface

water quality standards and groundwater standards. Beginning on the effective date of this permit, (if needed) interim measures shall be implemented to prevent discharges of pollutants to navigable waters. In addition, permanent runoff control system(s) shall be designed, operated and maintained in accordance with the requirements found in USDA Natural Resources Conservation Service standards and ch. NR 243, Wis. Adm. Code. If any upgrading or modifications to runoff controls are necessary, formal engineering plans and specifications must submitted to the Department for approval.

Manure and Process Wastewater Storage

The permit requires the operation to have adequate storage for manure and process wastewater and that storage or containment facilities are designed, operated and maintained to prevent overflows and discharges to waters of the state. In order to prevent overflows, the permittee must maintain levels of materials in liquid storage or containment facilities at or below certain levels including a one foot margin of safety that can never be exceeded. If any upgrading or modifications to the storage facilities are necessary, formal engineering plans and specifications must submitted to the Department for approval.

The permittee currently has approximately 12 months of storage for liquid manure. The permittee must maintain 180 days of storage, unless temporary reductions in required storage are approved by the Department.

Ancillary Service and Storage Areas

The permittee shall take preventative maintenance actions and conduct visual inspections to minimize pollutant discharges from areas of the operation that are not part of the production area or land application areas. These areas are called ancillary service and storage areas and include access roads, shipping and receiving areas, maintenance areas, refuse piles and CAFO outdoor vegetated areas.

Nutrient Management

With 5,594 milking and dry cows and 1,997 large heifers (800 to 1,200 lbs.), it is estimated that approximately 99,748,335 gallons and 5,886 tons of manure and process wastewater will be produced per year. The permittee owns *approximately* 1,987 acres of cropland and rents or has an agreement for about 14,337 acres. Given the rotation commonly used by the permittee, 15,872 acres are available (or open) to receive manure and process wastewater on an annual basis. The permit requires all landspreading of manure and process wastewater be completed in accordance with an approved nutrient management plan. The permit will require sampling and analysis of manure and process wastewater that will be landspread. Landspreading rates must be adjusted based on sample analysis. The permit requires the permittee to maintain a daily log that documents landspreading activities. The permit also requires the submittal of an annual report that summarizes all landspreading activities. Plans must be updated annually to reflect cropping plans and other operational changes. Among the requirements, the plans must include detailed landspreading information including field by field nutrient budgets.

The permittee is required to implement a number or practices to address potential water quality impacts associated with the land application of manure and process wastewater. Among the permit conditions are restrictions on manure ponding, restrictions on runoff of manure and process wastewater from cropped fields, and setbacks from wells and direct conduits to groundwater (e.g., sinkholes, fractured bedrock at the surface). In addition, the permittee must implement a phosphorus based nutrient management plan that addresses phosphorus delivery to surface waters by basing manure and process wastewater applications on soil test phosphorus levels or the Wisconsin Phosphorus index. Additional phosphorus application restrictions apply to fields that are high in soil test phosphorus (>100 ppm).

The permitee must also implement conservation practices when applying manure near navigable waters and their conduits, referred to as the Surface Water Quality Management Area (SWQMA). These practices include a 100-foot setback from navigable waters and their conduits, a 35-foot vegetated buffer adjacent to the navigable water or conduit, or a practice that provides equivalent pollutant reductions equivalent to or better than the 100-foot setback.

In addition, the permittee must comply with restrictions on land application of manure and process wastewater on frozen or snow-covered ground. Included in these restrictions is a prohibition on surface applications of solid manure (≥12%

solids) on frozen or snow-covered ground during February and March. Beginning November 1, 2020, non-emergency surface applications of liquid manure (<12%) on frozen or snow-covered ground are prohibited.

Monitoring and Sampling Requirements

The permittee must submit a monitoring and inspection program that outlines how the permittee will conduct self-inspections to determine compliance with permit conditions. These self-inspections include visual inspections of water lines, diversion devices, storage and containment structures and other parts of the production area. The permit requires periodic inspections and calibrations of landspreading equipment. The permittee must take corrective actions to problems identified inspections or otherwise notify the Department. Samples of manure, process wastewater and soils receiving land applied materials from the operation must also be collected and analyzed.

Sampling Points

The permit identifies the different sources of land applied materials (e.g., manure storage facilities, milking centers, egg-washing facilities) as "Sampling Points." For these Sampling Points, the permittee is required to sample and analyze the different sources for nutrients and other parameters which serve as the basis for determining rates of application for these materials. Other areas are also identified as Sampling Points as a means of identifying them as areas requiring action by the permittee, such as an upgrade or evaluation of a certain system or structure (e.g., runoff control systems), even though sampling is not actually required.

Sample Point Number: 001- Solids 001; 004- Solids 004; 008- Solids 008

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		lbs/ton	Quarterly	Grab	
Nitrogen, Available		lbs/ton	Quarterly	Calculated	
Phosphorus, Total		lbs/ton	Quarterly	Grab	
Phosphorus, Available		lbs/ton	Quarterly	Calculated	
Solids, Total		Percent	Quarterly	Grab	

1.1.1 Changes from Previous Permit

Sample Point 008 was modified to add settled solids removed from the digesters when they are being emptied.

1.1.2 Explanation of Operation and Management Requirements

This gives removed settled solids from the digesters the same sampling requirements as those for solid manure removed from waste storage ponds.

Solid manure sources must be properly sampled, and land applied according to the permit and nutrient management plan.

Sample Point Number: 002- WSF 002; 003- WSF 003; 005- WSF 005; 006- WSF 006; 007- WSF 007; 015- Digested Liquids, and 016- Digested Liquids

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		lb/1000gal	2/Month	Grab	
Nitrogen, Available		lb/1000gal	2/Month	Calculated	
Phosphorus, Total		lb/1000gal	2/Month	Grab	
Phosphorus, Available		lb/1000gal	2/Month	Calculated	
Solids, Total		Percent	2/Month	Grab	

1.1.3 Changes from Previous Permit

Sample Point 015 was added to the permit. It includes the new anaerobic digesters AD 1 and AD 2 and is for any liquid manure which is removed from the digesters for land application. This unlikely event could occur during a clean-out of the tanks.

Sample Point 016 was added to the permit. It includes the new anaerobic digesters AD 3 and AD 4 and is for any liquid manure which is removed from the digesters for land application. This unlikely event could occur during a clean-out of the tanks.

1.1.4 Explanation of Operation and Management Requirements

For both sample points 010 and 011, this requires the manure that would be landspread to be sampled in the same way as other manure sources.

Liquid Waste must be properly stored, and land applied according to the permit and nutrient management plan.

Sample Point Number: 009- Feed Storage Area Site One; 010- Feed Storage Area Site Two; 011- Storm Water Runoff

1.1.5 Changes from Previous Permit

There are no changes above from the previous permit.

1.1.6 Explanation of Operation and Management Requirements

Proper operation and maintenance is required to ensure unlawful discharges to waters of the state do not occur. Weekly or quarterly inspections are required and shall be recorded according to the monitoring plan.

2 Groundwater – Proposed Monitoring and Limitations

3 Schedules

3.1 Annual Reports

Required Action	Due Date
Submit Annual Report #1: Production site inspection summaries and groundwater monitoring annual report.	01/31/2019
Submit Annual Report #2: Production Site inspection summaries and groundwater monitoring annual report.	01/31/2020
Submit Annual Report #3: Production Site inspection summaries and groundwater monitoring annual report.	01/31/2021
Submit Annual Report #4: Production Site inspection summaries and groundwater monitoring annual report.	01/31/2022
Submit Annual Report #5: Production Site inspection summaries and groundwater monitoring annual report.	01/31/2023
Ongoing Annual Reports: Continue to submit Annual Reports until permit reissuance has been completed.	

3.2 Emergency Response Plan

Required Action	Due Date
Update Emergency Response Plan: Update a written Emergency Response Plan within 30 days of permit coverage, available to the Department upon request.	03/01/2018

3.3 Manure Storage Facility - Engineering Evaluation

Required Action	Due Date
Retain Expert: Retain a qualified expert to complete an engineering evaluation for Site One liquid manure storage facilities and report the name of the expert to the Department.	03/01/2019
Written Report: Submit a written report evaluating the existing manure storage facility's ability to meet the conditions in the Production Area Discharge Limitations and Manure and Process Wastewater Storage subsections and s. NR 243.15, Wis. Adm. Code. (See Standard Requirements for report details.)	03/01/2020
Plans and Specifications: Submit plans and specifications for Department review and approval in accordance with Chapter 281.41, Wis. Stats., and Chapter NR 243, Wis. Adm. Code, to permanently correct any adverse manure storage conditions.	03/01/2021
Corrections and Post Construction Documentation: Complete construction on the manure storage facility that permanently corrects any adverse conditions in concurrence with and approval by the Department, by the specified Date Due. Submit post construction documentation within 60 days of completion of the project.	09/01/2022

3.4 Submit Permit Reissuance Application

Required Action	Due Date

Reissuance Application: Submit a complete permit reissuance application 180 days prior to permit expiration.	08/01/2022

3.5 Monitoring & Inspection Program

Required Action	Due Date
Updated Monitoring and Inspection Program: Consistent with the Monitoring and Sampling Requirements subsection, the permittee shall submit an updated monitoring and inspection program within 90 days of the effective date of this permit.	03/01/2021

3.6 Nutrient Management Plan

Required Action	Due Date
Management Plan Annual Update #1: Submit an Annual Update to the Nutrient Management Plan by March 31st each year. Note: In addition to Annual Updates, submit Management Plan Amendments to the Department for written approval prior to implementation of any changes to nutrient management practices, in accordance with the Nutrient Management requirements in the Livestock Operational and Sampling Requirements section.	03/31/2018
Management Plan Annual Update #2: Submit an Annual Update to the Nutrient Management Plan.	03/31/2019
Management Plan Annual Update #3: Submit an Annual Update to the Nutrient Management Plan.	03/31/2020
Management Plan Annual Update #4: Submit an Annual Update to the Nutrient Management Plan.	03/31/2021
Management Plan Annual Update #5: Submit an Annual Update to the Nutrient Management Plan.	03/31/2022
Ongoing Management Plan Annual Updates: Continue to submit Annual Updates to the Nutrient Management Plan until permit reissuance has been completed.	

3.7 Feed Storage & Runoff Control - Engineering Evaluation

Required Action	Due Date
Retain Qualified Expert: The permittee shall retain a qualified expert to complete an engineering evaluation for the feed storage area and runoff controls at Site One and report the name of the expert to the Department.	03/01/2019
Written Description of Existing System: Submit an engineering evaluation that includes a written description of the existing feed storage area and its adequacy to meet the conditions found in the Production Area Discharge Limitations subsection and NR 243.15, Wis. Adm. Code.	03/01/2020
Plans and Specifications: Submit plans and specifications for Department review and approval to permanently correct any adverse conditions identified as part of the engineering evaluation for the feed storage area in accordance with Chapter 281.41, Wis. Stats., and Chapter NR 243, Wis. Adm. Code.	03/01/2021
Corrections and Post Construction Documentation: Complete construction of improvements to permanently correct any adverse conditions in concurrence with and approval by the Department, by	09/01/2022

the specified Date Due. Submit post construction documentation within 60 days of completion of the project.	

3.8 Groundwater Monitoring System - Plan

Required Action	Due Date
Phase 1 - Groundwater Monitoring Plan: Submit a groundwater monitoring plan for the initial 5 monitoring wells. The plan shall include groundwater monitoring requirements consistent with permit requirements.	02/28/2018
Phase 2 - Groundwater Monitoring Plan: Submit a plan for installation of remaining production area groundwater monitoring wells in accordance with ch. NR 141, Wis. Adm. Code, for Department review and approval. This plan shall include the following: A detailed site characterization based on data collected during Phase 1; A summary of groundwater flow directions and seasonal variability; Recommendations for the number and locations of additional groundwater monitoring wells (at minimum, a piezometer well should be included); and a list of proposed sampling parameters and frequency. The Department may require additional wells to properly monitor the production area.	02/28/2019
Well Installation: Complete well installation in accordance with ch. NR 141, Wis Adm. Code, within 90 days following approval by the Department of the Final Groundwater Monitoring Plan. (Note: Documentation of well construction must be submitted to the Department within 60 days of well installation).	

3.9 Groundwater Monitoring System - Reporting

Required Action	Due Date
Quarterly reporting to the Department: Quarterly reporting of tabulated groundwater monitoring data and water level contour maps is required. Quarterly reports shall be submitted to the regional contact via email or mail within 45 days of the last sample event for that quarter. Online reporting is also required via groundwater monitoring forms.	
Annual Reporting to the Department: An annual report that summarizes the groundwater monitoring data shall be submitted by January 31st each year. Any updates to the groundwater monitoring workplan shall also be included in this report.	

3.10 Explanation of Schedules

Schedule 3.5 is modified to submit an updated monitoring and inspection plan to include the anaerobic digesters that were constructed in 2020.

Other Comments:

The proposed permit for modification includes the addition of Section 4.2.6 “Requirements for Digesters for Biogas Production” which is a Standard Requirement section for permittees that have digesters. The proposed permit also includes updated standard language about how and where submittals are sent to the Department in Section 5 called Summary of Reports Due.

Attachments:

Plans and Specifications Approval Letter

Map(s)

Proposed Expiration Date:

February 1, 2023

Prepared By:

James Salscheider **Wastewater Specialist**

Date: 10/01/2020

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
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September 19, 2019

FILE REF: R-2019-0104
WPDES Permit #: WI-0059536

Lee Kinnard
Kinnard Farms Inc.
E2675 County Highway S
Casco, WI 54130

Subject: Conditional Approval of Plans & Specifications for Four Anaerobic Digesters, at Kinnard Farm, Sec. 19, T25N, R24E, Lincoln Township, Kewaunee County

Dear Mr. Kinnard:

This letter is to inform you that the Wisconsin Department of Natural Resources (Department) has reviewed and conditionally approves the above referenced plans and specifications, submitted by Douglas Gatrell, P.E., GHD, and received on June 28, 2019, with revisions received on August 26 and September 9 and 17, 2019. The review was conducted in accordance with s. 281.41, Wis. Stats., chs. NR 151 and NR 243, Wis. Adm. Code, and applicable NRCS Standards. The attached engineering report describes the project, lists standards that apply and provides compliance analysis. Questions may be directed to the assigned regional staff, or the review engineer Bernie Michaud (contact information is at the end of this letter).

Proposed Project: The proposed project includes the following facilities that are reviewable under s. NR 243.15, Wis. Adm. Code:

- Four anaerobic digesters (digesters).

Additionally proposed related components include a compressed gas truck loading station, a biogas conditioning building, and a thermal oxidizer and flare, not subject to review under s. NR 243.15, Wis. Adm. Code, except if they will handle waste in a liquid or solid form. The proposed digesters will not accept off-site wastes.

Plans and specifications were also received for waste transfer systems associated with the proposed digesters, which the Department will address in separate correspondence.

Conditions of Approval: The plans and specifications for project number R-2019-0104 are hereby approved, subject to chs. NR 151 and NR 243, Wis. Adm. Code, and the conditions listed below:

1. Revisions: If revisions are made to the approved plans and specifications, revised plans and specifications shall be submitted for approval modification, in accordance with ss. NR 108.03 and NR 108.04, Wis. Adm. Code, and s. 281.41(1)(c), Wis. Stats. Submit revised plans and specifications via the Department's e-Permitting System. Note: This includes revisions for local permitting. If a formal approval modification may not be warranted, contact the review engineer to confirm.
2. Approval Period: In accordance with ss. NR 243.15(1)(a)1., and NR 108.04(2)d., Wis. Adm. Code, if construction is not commenced within 2 years from the approval date, the approval is void, and a new approval must be obtained prior to commencing construction.
3. Notification: Prior to construction and when construction is complete, notify the Department's regional contact and county contact provided a copy of the approval (contact information is at the end of this letter).
4. Inspection: During the construction of critical components, inspection shall be performed by a Wisconsin registered professional engineer or other qualified third party (excludes the owner and construction contractor and their employees).
5. Post-Construction Documentation: In accordance with the permit, a post-construction report must be submitted to the DNR's e-Permitting website (http://dnr.wi.gov/permits/water) within 60 days of completing construction. The report must include documentation specified by s. NR 243.15(10), Wis. Adm. Code.

Limitation of Approval: The Department reserves the right to order changes or additions should conditions arise making this necessary. This approval is not to be construed as a determination on the issuance of a Wisconsin Pollutant Discharge Elimination System Permit or opinion as to the ability of the proposed system to comply with effluent limitations in such a permit, approval of an Environmental Impact Statement that may be prepared, or approval for any activities requiring a permit under chs. 30 or 31, Wis. Stats. Where necessary, plans and specifications should be submitted to the Department of Safety and Professional Services or other state or local agencies to ensure conformance with applicable codes or regulations of such agencies.

Tax Treatment: Tangible personal property, that becomes part of a waste treatment of pollution abatement plant or equipment, may be exempt from sales tax under s. 77.45(26), Wis. Stats. Similarly, property purchased or constructed as a waste treatment facility and used for industrial waste treatment may be exempt from general property taxes under s. 70.11(21), Wis. Stats. A prerequisite to exemption is filing a statement on prescribed forms. To obtain the forms, and information about this sales tax exemption, please contact the Department of Revenue, P.O. Box 8933, Madison, WI 53708, or check their website http://www.revenue.wi.gov/.

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to WIS. STAT. §§ 227.52 and 227.53, you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to WIS. STAT. § 227.42, you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with WIS. ADMIN. CODE § NR 2.05(5), and served on the Secretary in accordance with WIS. ADMIN. CODE § NR 2.03. The filing of a request for a contested case hearing does not extend the 30-day period for filing a petition for judicial review.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Mary Anne Lowndes

Mary Anne Lowndes
Chief, Runoff Management Section
Watershed Management Program

Enclosures: Wisconsin Department of Natural Resources Engineering Report

email:
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Bernie Michaud; DNR, Central Office
(608) 266-5239; Bernard.Michaud@wisconsin.gov

WISCONSIN DEPARTMENT OF NATURAL RESOURCES ENGINEERING REPORT

GENERAL INFORMATION

Farm Name: Kinnard Farms **WPDES Permit#:** WI-0059536

Location Address: E2675 County Highway S, Casco, WI **DNR Project #:** R-2019-0104

Project Status: Construction of the digesters is anticipated to begin as soon as possible after obtaining Department approval of the plans and specifciations. The proposed project does not involve a herd expansion or other activities that would cause an increase in waste generation.

Construction of the associated transfer systems will occur after construction of the digesters has commenced. Plans and specifications for the associated manure transfer systems were received on July 10, 2019. Plans and specifcations for the waste transfer pipeline from the sand separation facility to the proposed digesters were received on August 26, 2019. These two sets of plans and specfications will be addressed separately by the Department in subsequent correspondence.

Engineering Plans Certified by:	Initial Submittal:	Revised Submittal(s):
Douglas M. Gatrell, P.E.	June 28, 2019	August 26, and September 9 and 17, 2019

This is a multi-disciplinary project involving several technical service providers. The submittal lists responsibility for the design and certification of proposed components as follows:

- PlanET: Digester technology provider.
- Kiewit: Structural design and layout of the digesters, grading, and construction site sediment and erosion control, including swale and culvert sizing calculations.
- GHD: Waste transfer systems, and storm water components.

Site Assessment: The production area (site) is located in the Kewaunee River Watershed (HUC Code 0403010203). The nearest intermittent stream is approximately 4000 feet to the east. The nearest wetland is approximately 1000 feet to the northeast.

Clean runoff will be diverted around waste handling areas to an existing stormwater detention basin. No ground water supply wells are located within 250 feet of the proposed facilities or systems.

Soil investigation was performed in May 2019 by S&ME, Valley View, Ohio, consisting of ten soil borings ranging in depth from 10.5 to 19 feet below ground surface (b.g.s.) in the vicinity of the proposed project, and six test pits to 12-13 feet b.g.s.

The soil investigation found the primary soils to be top soil overlaying silty sand with gravel and then underneath that sandy lean clay over limestone bedrock. Perched water was found in soil boring (SB-305) beyond the required separation distance, otherwise groundwater and bedrock were found near the bottom of many of the borings and well beyond the required sepation distance. A soils analysis was conducted on 14 of the soil boring and the percent fines ranged from 28.6 to 60.1 percent.

No karst or sinkhole features are known to exist within 1,000 feet of the proposed facilities. The site was screened for karst features with the assistance of Kewaunee County staff and karst features were greater than 1000 feet away. Given the distance to karst features and the high percent fines in the site soils, the site does not meet the criteria for a Sensitive Environmental Setting (SES) site as described in NRCS 313 (10/17R).

PROJECT SUMMARY: The proposed facilities will be owned and operated by Kewaunee Renewable Energy, LLC, but are regulated under the Kinnard Farms, Inc. WPDES CAFO Permit. The biogas will be generated and processed on-site, and transported by trucks to an off-site pipeline injection station.

The construction drawings primarily reference elevations using an on-site local benchmark (BM), wherein 100 feet BM correlates to 792.50 feet NAVD88 (North American Vertical Datum, 1988).
To ensure a structurally sound soil sub-base for the proposed digesters, a geotechnical engineer will be onsite to conduct tests and observations to insure that the project compaction criteria are met.

Proposed Facilities:

Digesters (four): The proposed design was submitted to meet NRCS 313 (10/17R), and NRCS 522 (10/17R), Table 3, Column A Liquid Tight Concerete with Waterstop, which is meant to be used for an SES site (described above). The proposed design does not meet two design parameters, but this is not a concern for two reasons.

- The proposed design is deemed to substantially meet the referenced criteria (see Concrete Design Parameter Exceptions, below).
- Since the project site is not an SES site, the design does not need to meet the requirements of NRCS 522 (10/17R), Table 3, Column A Liquid Tight Concerete with Waterstop, and instead just needs to meet the requirements of 522 (10/17R), Table 2, Column A Reduced Seepage Concerete with Waterstop, which this plan design is considered to meet.

The proposed design was also submitted to meet NRCS 366 Anaerobic Digester (01/18). The design is in compliance with s. NR 243.15(3), Wis. Adm. Code. The digesters will be located in the northern portion of the production area. Below is a summary of what is proposed.

- Each of four proposed digesters (AD1, AD2, AD3 and AD4) will be a stand alone circular shaped structure with interior dimensions of 98 feet 5 inches diameter by 26 feet 4 inches deep. Approximately 4 feet of the interior depth will be below grade. Each digester's floors and walls will be constructed of steel bar reinforced concrete, and each digester will have a flexible membrane cover.
- The walls will be 12 inches thick. The floor will be 10 inches thick, and the footings will be 24 inch thick and 6-foot wide. The walls and floors will have two mats of steel bar reinforcement.
    - The 12-inch thick walls will have #5 rebar at varying spacing vertically and #8 rebar at varying spacing horizontally.
    - The 10-inch thick floor will have #5 rebar spaced at 10 inches and 12 inches. The rebar design for the walls and floor achieve a minimum rebar to concrete ratio of 0.5% as specified by ACI-350.
    - Additional rebar will be placed within the footings, and around penetrations and openings.
    - Below the concrete floor of each digester, a layer of high density rigid foam will be placed for thermal insulation. The rigid foam is reported to have a compressive strength of 100 psi, and a compressive modulus of 3,700 psi, adequate to provide bearing support for the digesters.
- Each digester will have an access door located near the ground level, and four agitation hatches (see Drwg. SF103 and SF104).
- The floors will slope at two percent towards the center with the center approximately 1 ft lower than the perimeter.
- Each digester's cover will be supported by a stainless steel pier anchored near the center of the concrete floor.
- Each digester will have a total volume of 1,498,506 gallons. The freeboard level will be at 2.05 feet from the top or 120.276 feet BM [Drwg SF301]. Because the digesters will be covered and not collect precipitation, the freeboard level will be the same as the maximum operating level (MOL). The MOL volume or usable capacity will be 1,381,849 gallons per each digester.
- The floor perimeter will be at 788.50 feet NAVD88, and the top of wall will be at 814.833 feet NAVD88. The MOL will be at 812.776 feet NAVD88 or 2.06 feet below the top of the wall.
- Each digester's fill pipes will discharge into the digester above its MOL, which avoids the risk of spills due to back syphoning. Spill risk is also minimized by a system of level sensors, flow meters, and automated valves to prevent spills. If the flow meter in the pipe system manifold detects zero flow when the pumps are running (a sign of a pipe break), the pump will be shut down automatically. In the event that a spill occurs, existing on-site storm water detention ponds would be able to provide some level of temporary containment.

Concrete Design Parameter Exceptions: The design does not meet the following design parameters for Liquid Tight Concrete with Waterstop as required for an SES site:

F_y (flexural yield strength of the rebar) $\leq$ 60,000 psi

F_s (flexural steel stress) $\leq$ 20,000 psi

NRCS 522 (10/17R), Table 3, Column A Liquid Tight Concerete with Waterstop specifies that both ACI-350 and NEM Part 536 must be met. The maximum values for F_y and F_s listed above are specified in NEM 536.21, and are in addition to the criteria in ACI-350.

The submittal reports the proposed design follows the Portland Concrete Association's specifications for a reinforced concrete circular tank, which is acceptable, but does not alleviate the need to meet the F_y and F_s values specified in NEM 536.21 (and listed above) in order to meet NRCS 522 (10/17R), Table 3, Column A Liquid Tight Concerete with Waterstop. However, the proposed design provides an F_s of 21,700 psi and an F_y of 75,000 psi. The F_s is relatively close to the values specified in NEM 536.21. The F_y value of 75,000 psi is commonly used in industry. Using the NEM 535.21 values above would decrease the rebar spacing and could result in greater difficulty in consolidating the concrete and potentially decrease the concrete installation quality. The Department's investigation into this issue has found a neglible negative impact to the anticipated concrete quality as a result of the proposed F_y and an F_s values. Therefore, the Department finds the proposed design substantially complies with NRCS 522 (10/17R), Table 3, Column A Liquid Tight Concerete with Waterstop.

Operation: Prior to transfer to a digester, sand will be separated from the manure in the existing manure processing building. Following initial sand separation, remaining liquid manure will be pumped through a digester. Silage leachate and feed storage runoff will not go through the ADs but instead will be directly transferred to long term storage.

From the digesters, digestate will be returned to the manure processing building prior to being pumped to Waste Storage 1 for long term storage prior to land application. The project does not propose acceptance of any off-site wastes.

The biogas from the ADs will be collected and processed to remove carbon dioxide, water, and hydrogen sulfide. The processed biogas will be compressed and loaded into trucks for transport to a pipeline injection facility in Newton, Wisconsin. A thermal oxidizer will be located onsite, to destroy hydrogen sulfide removed from the biogas. A gas flare will also be located onsite to burn off-specification biogas.

DAYS OF STORAGE:

The proposed project is not anticipated to change the days of storage, so the provided days of storage calculations were not reviewed.

PURPOSE OF THIS REPORT: This report documents review of plans and specifications for each structure or practice indicated below, including findings regarding the structure or practice's compliance with applicable standards. The reviewer considered if management and site assessment were conducted, documented, and reflected in the final design, and if proper construction and related plans (operation and maintenance, inspection, erosion control if applicable) were provided, and demonstrated compliance with applicable rules standards.

DECISION RECOMMENDATION: Based on my review completed on September 18, 2019, the proposed plans and specifications meet ch. NR 243, Wis. Adm. Code, and applicable NRCS Standards. Therefore, I recommend the plans and specifications be approved.

Bernie Michaud

Bernie Michaud, P.E.
Water Resources Engineer

LEGEND

PROPOSED DIGESTER LAYOUT

FUTURE MANURE TRANSFER PIPELINE

ROAD ROW

PROPOSED ANAEROBIC DIGESTER DEVELOPMENT

FUTURE MANURE TRANSFER PIPELINE

TAMARACK RD

SPRUCE RD

ROBIN LA

CTH S

CTH C

FREESTALL BARN

MANURE PROCESSING BUILDING

MILKING PARLOR

HOLDING AREA

FEED PAD

VEGETATED TREATMENT AREA

WSP CELL #1

WSP CELL #2

WSP CELL #3

COMMOD. SHED

FEED PAD

SHOP

FREESTALL BARN

FREESTALL BARN

MILKING PARLOR AND HOLDING AREA

FREESTALL BARN

FREESTALL BARN

SAND SETTLING LANES

FEED PAD

WASTE STORAGE POND #1

Source: USDA NAIP 2017; Kewaunee County

0 500 ft

N

GHD

KEWAUNEE RENEWABLE ENERGY, LLC
CASCO, WISCONSIN
DESIGN REPORT - ANAEROBIC DIGESTER DEVELOPMENT

11188824-05

Jun 27, 2019

SITE PLAN - EXISTING AND PROPOSED CONDITIONS

FIGURE 5

GIS File: I:\GIS\Projects\8-chars\11-----\1118----\111888--\11188824\11188824-REPORTS\11188824-05(003)\11188824-05(003)GIS-SP005.mxd

INSTALL EROSION CONTROL BLANKET PER STANDARD TEMPORARY EROSION CONTROL BLANKET - CHANNEL APPLICATION DETAIL ON DRAWING CD-021

INSTALL ROCK CHECK DAM PER STANDARD ROCK CHECK DAM DETAIL ON DRAWING CD-021

INSTALL SILT FENCE PER STANDARD SILT FENCE DETAIL ON DRAWING CD-021

INSTALL ROCK CHECK DAM PER STANDARD ROCK CHECK DAM DETAIL ON DRAWING CD-021

INSTALL EROSION CONTROL BLANKET PER STANDARD TEMPORARY EROSION CONTROL BLANKET - CHANNEL APPLICATION DETAIL ON DRAWING CD-021

INSTALL ROCK CHECK DAM PER STANDARD ROCK CHECK DAM DETAIL ON DRAWING CD-021

EXISTING SWALE DIVERTED AROUND PROPOSED FACILITY

INSTALL SILT FENCE PER STANDARD SILT FENCE DETAIL ON DRAWING CD-021

SECTION LINE

SPRUCE ROAD

R/W

UGE

UGT

EXISTING ROADWAY

INSTALL STABILIZED CONSTRUCTION ENTRANCE PER STANDARD TEMPORARY CONSTRUCTION ENTRANCE DETAIL ON DRAWING CD-021

INSTALL ROCK CHECK DAM PER STANDARD ROCK CHECK DAM DETAIL ON DRAWING CD-021

INSTALL ROCK CHECK DAM PER STANDARD ROCK CHECK DAM DETAIL ON DRAWING CD-021

EXISTING DETENTION POND

EXISTING 24" CULVERT TO REMAIN IN PLACE

KINNARD FARMS INC
TAXKEY: 31 010 19 1 1
BOOK 227 PAGE 155
D.R.K.C.W.

EXISTING BUILDING

N

40 0 40 80
SCALE IN FEET
SCALE: 1" = 40'-0"

-ISSUED FOR PERMIT-

REV	DESIGN BY	CHECKED BY	DATE
B	ISSUED FOR PERMIT		
	M. DREHER	B. HARDING	06-25-19
A	ISSUED FOR REVIEW		
	M. DREHER	B. HARDING	05-24-19

KEWAUNEE
RENEWABLE ENERGY, LLC

Kiewit

WISCONSIN
BRETT M HARDING
E-47053-6
LENEXA, KS
PROFESSIONAL ENGINEER
Digitally signed by Brett M Harding
Reason: I am approving this document
Date: 2019.06.26 08:41:16 -05'00'

EROSION CONTROL PLAN

ENGINEER/DESIGN ORIGINATOR	M. DREHER
LEAD ENG	B. HARDING
ENG MGR	S. VARGO
PROJ MGR	A. BROWN

DRAWING NUMBER
20030210-CE-001

JUN 26, 2019 - 6:55am DRAWING NAME: R:\ES\20030210-DTEBE_Kinnard\DES\CIV\CE-Erosion_Control\20030210-CE-001.dwg